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Forest Insect and Disease Management

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BIOLOGICAL
EVALUATION R2-79-6

EXAMINATION OF BESSEY
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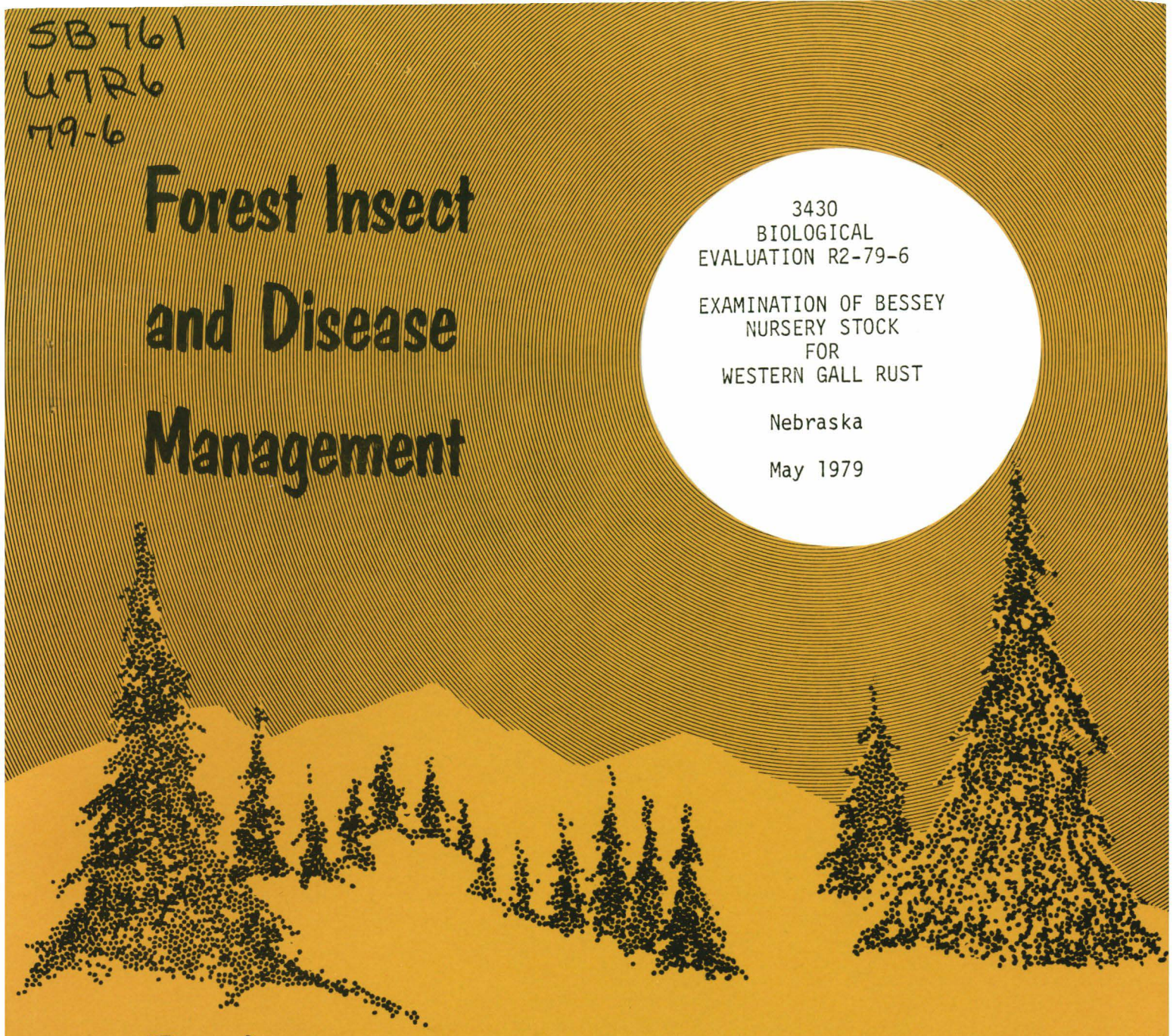
FOR
WESTERN GALL RUST

Nebraska

May 1979



Rocky Mountain Region

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EXAMINATION OF BESSEY NURSERY STOCK FOR WESTERN GALL RUST

Nebraska

May 1979

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ABSTRACT

Evaluation of four, 1,000 ponderosa pine seedling (2-0) samples from the USDA, Forest Service Bessey Nursery, located in Halsey, Nebraska for western gall rust has revealed a very low incidence of infected seedlings (0 - 0.5 percent). Apparently seedlings became infected by spores released from galled windbreak ponderosa pine adjacent to the nursery. The nurserymen is encouraged to continue an annual program of roguing infected windbreak trees for western gall rust. This practice should be adequate to keep infection to a tolerable level.

As a result of this evaluation, this study is terminated.

INTRODUCTION

In 1971, the Forest Insect and Disease Management Staff made a decision to periodically sample 2-0 ponderosa pine, *Pinus ponderosa* Laws., seedlings from the USDA, Forest Service Bessey Nursery, located in Halsey, Nebraska, for the presence of western gall rust, *Endocronartium harknessii* (J. P. Moore) Y. Hirat., (refer to memorandum 5200, Forest Insect and Disease Control, dated 11/30/71 - Subject: "Trip to Bessey Nursery and District, Downing and Brown." Also Biological Evaluations - R2-76-2, May 1976 and R2-77-1, May 1977).

METHODS AND MATERIALS

As early as 1963, various research and pest control personnel noted infection of nursery stock at the Bessey Nursery, apparently from spores released from infected windbreak trees adjacent to nursery beds. Several persons expressed concern that the rust may be inadvertently spread to other areas of the Rocky Mountain Region through outplanting of infected nursery-grown seedlings.

Western gall rust has been previously reported on a very low percentage of the nursery stock (0.5 to 4 percent). Since 1971, a 1,000 seedling sample has been collected at two-year intervals to more accurately determine infection rates for nursery stock inspected and cleared for shipment to the Forests.

Each 1,000 tree samples were shipped to the Colorado State Forest Service Nursery at Fort Collins and placed in tar paper containers. The seedlings were maintained in a lath house at the Colorado State University for two or three years to allow gall rust symptoms to develop.

RESULTS

The following data have been collected for all the samples taken to date:

Year Sampled	Examination Date	Seedlings Examined	Live	Dead	Missing [1]	Rust Infected % of Examined
1971	07/15/74	655	522	133	345	0.0
1973	05/13/76	677	587	89	323	0.1
1975	05/19 & 05/23/77	992	969	23	8	0.5
1977 [2]	04/24/79	994	838	154	41	0.2

[1] The large number of missing trees for the 1971 and 1973 samples was attributed to vandalism. Corrective measures were taken in 1975 to prevent these losses.

[2] A 1,035 seedling sample was collected in 1977.

Results of these samples indicate that western gall rust incidence is low on ponderosa pine seedlings from the Bessey Nursery. During the 1977 and 1979 examination all rust galls were located within the second internode which indicates new needles were infected during the second growing season at the nursery. Because gall formation takes at least one year to develop, these latent infections are probably not visible during the culling and grading operation before shipment from the nursery.

In order to reduce the potential infection of nursery stock from infected pine within nursery windbreaks, infected branches are pruned annually. This practice should be continued to reduce inoculum potential in the vicinity of nursery beds.

CONCLUSIONS AND RECOMMENDATIONS

Based on these four evaluations of nursery planting stock, western gall rust does not appear to be a problem at Bessey Nursery and the study is terminated. If a conscientious effort is made to rogue out rust galls around the nursery, the inoculum level should be low enough to not pose a problem.